

State/Industry Network

Air Quality Report

2<sup>nd</sup> Quarter 1999

Prepared By:

Air Quality Monitoring Branch  
Division of Environmental Engineering  
North Dakota Department of Health

September 1999



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## SECTION ONE

### DISCUSSION OF MONITORING RESULTS

### Sulfur Dioxide (SO<sub>2</sub>)

There were three exceedances of the State 1-hour standard during the quarter. The maximum 1-hour concentration was 401 ppb on May 5 at Amerada Hess - Tioga #3; the maximum 3-hour concentration was 346 ppb on May 5 at Amerada Hess - Tioga #3; and, the maximum 24-hour concentration was 97 ppb on May 6 at Mandan Refinery - SPM. All sites achieved at least an 80% data recovery for the period operated except TRNP - SU (Painted Canyon).

TRNP - SU (Painted Canyon) failed to achieve 80% data recovery due to equipment failure.

The exceedances at Amerada Hess Tioga #3 occurred during sulfur plant startup after a scheduled turnaround. The department had received written notification of the scheduled maintenance prior to beginning work.

### Sulfur Dioxide (SO<sub>2</sub>) 5-Minute Average

The maximum 5-minute concentration was 387 ppb on May 22 at Bear Paw - MGP #3.

### Hydrogen Sulfide (H<sub>2</sub>S)

There were no exceedances of the H<sub>2</sub>S standards during the quarter. The maximum 1-hour concentration was 94 ppb on April 12 at Amerada Hess - Tioga #2; the maximum 24-hour concentration was 19 ppb on April 12 at Amerada Hess - Tioga #2; the maximum 3-month concentration was 2 ppb in April at Amerada Hess - Tioga #2. The site achieved at least an 80% data recovery for the period operated.

### Ozone (O<sub>3</sub>)

There was no exceedance of the ozone standard during the quarter. The maximum observed 1-hour concentration was 75 ppb on June 6 at Hannover. The maximum 8-hour concentration was 71 ppb on May 2 at Fargo NW. All sites achieved at least an 80% data recovery for the period operated.

### Nitrogen Dioxide (NO<sub>2</sub>)

The maximum 1-hour concentration observed was 47 ppb on April 23 at Fargo NW. All sites achieved at least an 80% data recovery for the period operated except Fargo NW.

Fargo NW failed to achieve 80% data recovery to equipment malfunction.

### Inhalable FRM PM<sub>2.5</sub> Particulates

The maximum 24-hour average concentration was 19.5 µg/m<sup>3</sup> on June 20 at Grand Forks - North. All sites achieved at least an 80% data recovery for the period operated except Short Creek - SPM.

The Short Creek - SPM sampler was returned from the manufacturer and returned to service on April 6. Short Creek - SPM failed to achieve 80% data recovery do to operator problems.

### Inhalable non-FRM PM<sub>2.5</sub> Particulates

The maximum 24-hour average concentration was 15.6 µg/m<sup>3</sup> on April 30 at Dickinson Residential. All sites achieved at least an 80% data recovery for the period operated.

The Dickinson Residential PM<sub>10</sub> was modified to operate as a non-FRM PM<sub>2.5</sub> and restarted effective April 6.

### Inhalable PM<sub>10</sub> Particulates

There was no exceedance of the 24-hour standard during the quarter. The maximum 24-hour average concentration was 39.1 µg/m<sup>3</sup> on June 17 at Fargo NW. All sites achieved at least an 80% data recovery for the period operated.

### Inhalable PM<sub>2.5</sub> Sulfates (SO<sub>4</sub>)

The purpose for sulfate analysis is to aid the Department in assessing the impact of SO<sub>2</sub> emissions on inhalable particulate concentrations and visibility. The maximum 24-hour PM<sub>2.5</sub> sulfate concentration was 5.6 µg/m<sup>3</sup> on April 30 at Dickinson Residential.

The Dickinson Residential PM<sub>10</sub> was modified to operate as a non-FRM PM<sub>2.5</sub> and restarted effective April 6.

### Inhalable PM<sub>10</sub> Sulfates (SO<sub>4</sub>)

The purpose for sulfate analysis is to aid the Department in assessing the impact of SO<sub>2</sub> emissions on inhalable particulate concentrations and visibility. The maximum 24-hour PM<sub>10</sub> sulfate concentration was 5.7 µg/m<sup>3</sup> on April 30 at Short Creek - SPM. All sites achieved at least an 80% data recovery for the period operated.

### PM<sub>2.5</sub> Sulfate /PM<sub>2.5</sub> Analysis

The PM<sub>2.5</sub> sulfate/PM<sub>2.5</sub> total mass tables present statistics for PM<sub>2.5</sub> sulfate and PM<sub>2.5</sub> total mass when both concentrations are greater than the respective minimum detectable concentration: 0.5 µg/m<sup>3</sup> for PM<sub>2.5</sub> sulfate analysis; 4 µg/m<sup>3</sup> for PM<sub>2.5</sub> total mass. Statistics for the ratio are produced by evaluating the ratio of the PM<sub>2.5</sub> sulfate concentration to the PM<sub>2.5</sub> total mass concentration for each data pair. In the individual summaries, one-half of the minimum detectable concentration is substituted for those concentrations less than the minimum detectable value. However, when the PM<sub>2.5</sub> total mass concentration is less than 4 µg/m<sup>3</sup>, the PM<sub>2.5</sub> sulfate concentration can be higher than the PM<sub>2.5</sub> total mass concentration. This is because of the variability in the sulfate analysis procedure at low concentrations. Therefore, when calculating the ratio of PM<sub>2.5</sub> sulfate concentration to PM<sub>2.5</sub> total mass concentration, only data pairs where both the PM<sub>2.5</sub> sulfate and PM<sub>2.5</sub> total mass concentrations are greater than the minimum detectable concentrations are used. When the ratio is multiplied by 100, it becomes the percentage of total mass which is sulfate. The maximum PM<sub>2.5</sub> Sulfate/PM<sub>2.5</sub> total mass ratio was 0.359 (35.9%) on April 30 at Dickinson Residential. The maximum average ratio was 0.132 (13.2%) at Dickinson Residential.

### PM<sub>10</sub> Sulfate/PM<sub>10</sub> Analysis

The PM<sub>10</sub> sulfate/PM<sub>10</sub> total mass tables present statistics for PM<sub>10</sub> sulfate and PM<sub>10</sub> total mass when both concentrations are greater than the respective minimum detectable concentration: 0.5 µg/m<sup>3</sup> for PM<sub>10</sub> sulfate analysis; 4 µg/m<sup>3</sup> for PM<sub>10</sub> total mass. Statistics for the ratio are produced by evaluating the ratio of the PM<sub>10</sub> sulfate concentration to the PM<sub>10</sub> total mass concentration for each data pair. In the individual summaries, one-half of the minimum detectable concentration is substituted for those concentrations less than the minimum detectable value. However, when the PM<sub>10</sub> total mass concentration is less than 4 µg/m<sup>3</sup>, the PM<sub>10</sub> sulfate concentration can be higher than the PM<sub>10</sub> total mass concentration. This is because of the variability in the sulfate analysis procedure at low concentrations. Therefore, when calculating the ratio of PM<sub>10</sub> sulfate concentration to PM<sub>10</sub> total mass concentration, only data pairs where both the PM<sub>10</sub> sulfate and PM<sub>10</sub> total mass concentrations are greater than the minimum detectable concentrations are used. When the ratio is multiplied by 100, it becomes the percentage of total mass which is sulfate. The maximum PM<sub>10</sub> Sulfate/PM<sub>10</sub> total mass ratio was 0.278 (27.8%) on April 30 at Short Creek - SPM. The maximum average ratio was 0.118 (11.8%) at Short Creek - SPM.





## SECTION TWO

### AMBIENT AIR QUALITY DATA

#### SUMMARIES

COMPARISON OF AIR QUALITY DATA WITH  
THE NORTH DAKOTA AMBIENT AIR QUALITY STANDARDS \*

POLLUTANT : Sulfur Dioxide (ppb)

LOCATION	YEAR	SAMPLING PERIOD	NUM OBS	1 - HOUR		M A X I M A		24 - HOUR		ARITH MEAN	1HR #>273	24HR #>99	% >MDV
				1ST MM/DD/HH	2ND MM/DD/HH	1ST MM/DD/HH	2ND MM/DD/HH	1ST MM/DD	2ND MM/DD				
Amerada Hess - Tioga #1	1999	APR-JUN	2165	27 05/03/14	14 05/11/22	12 05/03/14	10 05/11/23	3 04/06	3 05/28	1.3			11.1
Amerada Hess - Tioga #3	1999	APR-JUN	2167	401 05/05/21	375 05/05/22	346 05/05/23	265 05/06/02	72 05/06	64 05/05	4.2	3		19.9
Bear Paw - MGP #3	1999	APR-JUN	2166	54 05/22/10	22 05/22/11	26 05/22/11	13 05/24/08	5 05/22	3 05/24	1.1			3.1
Bear Paw - MGP #5	1999	APR-JUN	2168	55 05/03/01	47 05/03/02	41 05/03/02	9 06/21/08	7 05/03	4 04/28	1.4			10.5
Beulah - North	1999	APR-JUN	2071	66 06/29/17	37 06/29/16	36 06/29/17	22 05/20/11	7 05/20	6 05/31	2.3			24.6
DGC #12	1999	APR-JUN	2174	64 06/26/05	61 06/26/06	24 06/26/05	21 06/26/08	7 06/26	6 05/08	1.7			13.4
DGC #14	1999	APR-JUN	2168	87 06/28/10	66 06/28/11	55 06/28/11	29 05/19/11	9 06/28	8 05/08	2.0			17.7
DGC #16	1999	APR-JUN	2088	73 06/25/08	58 05/08/12	38 05/08/08	36 06/25/08	16 05/08	11 06/25	2.7			29.7
DGC #17	1999	APR-JUN	2163	114 06/25/06	69 06/25/05	46 06/25/08	38 05/21/08	16 06/25	11 06/16	3.4			48.9
Dunn Center	1999	APR-JUN	2163	14 04/23/10	12 04/23/11	9 04/23/11	7 04/23/14	3 04/23	3 06/05	1.1			5.7
Fargo NW	1999	APR-JUN	2172	7 04/27/10	7 04/27/11	5 04/27/11	4 05/19/02	2 04/27	2 05/19	1.0			1.6
Hannover	1999	APR-JUN	2161	60 05/08/11	49 06/05/10	37 05/08/14	30 06/05/11	10 05/08	7 06/16	2.1			18.4
Mandan Refinery - SPM	1999	APR-JUN	2168	171 05/06/03	166 05/05/20	161 05/06/05	155 05/06/08	97 05/06	71 05/05	6.9			25.6
Mandan Refinery NW - SPM	1999	APR-JUN	2171	123 05/21/20	92 05/13/20	59 05/13/20	55 06/17/23	26 05/13	23 06/17	4.4			35.9

COMPARISON OF AIR QUALITY DATA WITH  
THE NORTH DAKOTA AMBIENT AIR QUALITY STANDARDS \*

POLLUTANT : SULFUR DIOXIDE (ppb)

LOCATION	YEAR	SAMPLING PERIOD	NUM OBS	1 - HOUR		M A X I M A		24 - HOUR		ARITH MEAN	1HR #>273	24HR #>99	% >MDV
				1ST	2ND	1ST	2ND	1ST	2ND				
				MM/DD/HH	MM/DD/HH	MM/DD/HH	MM/DD/HH	MM/DD	MM/DD				
Sharon	1999	APR-JUN	2165	2 04/06/10	1 04/01/00	1 04/01/02	1 06/30/23	1 04/01	1 06/30	1.0			0.0
Short Creek - SPM	1999	APR-JUN	2170	42 06/04/19	42 06/30/09	27 06/30/11	26 06/16/11	10 05/17	7 06/07	1.9			17.2
TRNP - SU (Painted Canyon)	1999	APR-JUN	1596 ***	9 05/29/11	5 05/29/12	5 05/29/11	4 05/29/14	2 05/29	1 06/30	1.0			1.9
White Shield	1999	APR-JUN	2172	24 05/25/10	22 06/02/11	19 05/25/11	15 05/08/14	6 05/25	5 04/05	1.7			15.3

The maximum 1-hour concentration is 401 ppb at Amerada Hess - Tioga #3 on 05/05/21  
The maximum 3-hour concentration is 346 ppb at Amerada Hess - Tioga #3 on 05/05/23  
The maximum 24-hour concentration is 97 ppb at Mandan Refinery - SPM on 05/06

\* The air quality standards are:

STATE Standards -

- 1) 273 ppb maximum 1-hour average concentration.
- 2) 99 ppb maximum 24-hour average concentration.
- 3) 23 ppb maximum annual arithmetic mean concentration.

FEDERAL Standards -

- 1) 500 ppb maximum 3-hour concentration not to be exceeded more than once per year.
- 2) 140 ppb maximum 24-hour concentration not to be exceeded more than once per year.
- 3) 30 ppb annual arithmetic mean.

\*\*\* Less than 80% of the possible samples (data) were collected.

COMPARISON OF AIR QUALITY DATA WITH  
THE NORTH DAKOTA AMBIENT AIR QUALITY STANDARDS \*

POLLUTANT : Sulfur Dioxide 5-Minute Averages (ppb)

LOCATION	YEAR	PERIOD	OBS	5 - M I N U T E M A X I M A						# HOURS >600	% >MDV
				1ST	DATE	2ND	DATE	3RD	DATE		
					MM/DD/HH		MM/DD/HH		MM/DD/HH		
Bear Paw - MGP #3	1999	APR-JUN	2166	387	05/22/10	144	05/22/11	83	05/22/12	0	9.4
Bear Paw - MGP #5	1999	APR-JUN	2168	113	05/03/02	107	04/03/23	101	04/29/00	0	19.9
Beulah - North	1999	APR-JUN	2071	260	06/29/17	157	06/29/16	71	04/23/09	0	33.8
Dunn Center	1999	APR-JUN	2163	31	06/02/09	19	05/02/05	18	04/23/11	0	8.6
Fargo NW	1999	APR-JUN	2172	7	04/27/10	7	04/27/11	7	05/19/02	0	1.6
Hannover	1999	APR-JUN	2161	152	06/15/09	107	04/15/11	92	06/05/10	0	27.8
Mandan Refinery - SPM	1999	APR-JUN	2168	228	05/05/20	207	05/05/07	204	05/06/05	0	34.5
Mandan Refinery NW - SPM	1999	APR-JUN	2171	161	05/21/20	155	05/21/21	152	04/12/09	0	47.5
Sharon	1999	APR-JUN	2165	2	04/06/10	1	04/06/13	1	04/06/09	0	0.0
Short Creek - SPM	1999	APR-JUN	2170	102	06/30/09	96	06/30/19	76	05/17/08	0	25.6
TRNP - SU (Painted Canyon)	1999	APR-JUN	1596	9	05/29/11	5	05/29/12	5	05/29/13	0	1.9

The maximum 5-minute concentration is 387 ppb at Bear Paw - MGP #3 on 05/22/10

\* No Standard is currently in effect:

COMPARISON OF AIR QUALITY DATA WITH  
THE NORTH DAKOTA AMBIENT AIR QUALITY STANDARDS \*

POLLUTANT : Hydrogen Sulfide (ppb)

LOCATION	YEAR	SAMPLING PERIOD	NUM OBS	1 - HOUR		24 - HOUR		3 - MONTH		ARITH MEAN	1HR #>200	24HR #>100	% >MDV
				1ST MM/DD/HH	2ND MM/DD/HH	1ST MM/DD	2ND MM/DD	1ST MM	2ND MM				
Amerada Hess - Tioga #2	1999	APR-JUN	2166	94 04/12/21	61 04/12/19	19 04/12	6 04/30	2 04	2 06	2.3			25.8

The maximum 1-hour concentration is 94 ppb at Amerada Hess - Tioga #2 on 04/12/21  
the maximum 24-hour concentration is 19 ppb at Amerada Hess - Tioga #2 on 04/12  
The maximum 3-month concentration is 2 ppb at Amerada Hess - Tioga #2 on 04

\* The State air quality standards are:

- 1) 10 ppm maximum instantaneous (ceiling) concentration not to be exceeded.
- 2) 200 ppb maximum 1-hour average concentration not to be exceeded more than once per month.
- 3) 100 ppb maximum 24-hour average concentration not to be exceeded more than once per year.
- 4) 20 ppb maximum arithmetic mean concentration averaged over three consecutive months.

COMPARISON OF AIR QUALITY DATA WITH  
THE NORTH DAKOTA AMBIENT AIR QUALITY STANDARDS \*

POLLUTANT : Ozone (PPB)

LOCATION	YEAR	SAMPLING PERIOD	NUM OBS	M A X I M A 1 - HOUR			8 - HOUR			1HR #>120	8HR #>80
				1ST MM/DD/HH	2ND MM/DD/HH	3RD MM/DD/HH	1ST MM/DD/HH	2ND MM/DD/HH	3RD MM/DD/HH		
Beulah - North	1999	APR-JUN	2070	73 04/30/15	71 04/30/14	69 04/30/13	68 04/30/09	64 04/30/08	64 04/30/10		
Dunn Center	1999	APR-JUN	2167	71 06/06/13	68 06/06/12	62 04/30/15	60 05/01/10	60 05/01/09	60 05/01/08		
Fargo NW	1999	APR-JUN	2171	73 05/02/13	72 05/01/15	72 05/02/12	71 05/02/09	66 05/02/10	66 05/02/08		
Hannover	1999	APR-JUN	2168	75 06/06/16	72 04/30/14	72 06/06/10	69 04/30/09	67 04/30/08	67 04/30/10		
Sharon	1999	APR-JUN	2164	70 05/02/13	70 06/07/11	69 05/01/14	68 06/07/09	68 06/07/08	68 06/07/07		
TRNP - SU (Painted Canyon)	1999	APR-JUN	2171	61 05/02/15	59 04/30/16	59 04/30/17	58 05/01/10	57 05/01/09	57 05/02/10		

The maximum 1-hour concentration is 75 ppb at Hannover on 06/06/16  
The maximum 8-hour concentration is 71 ppb at Fargo NW on 05/02/09

\* The air quality standards for ozone are:

STATE - 120 ppb not to be exceeded more than once per year.

FEDERAL - Fourth highest daily maximum 8-hour averages for a 3-year period not to exceed 80 ppb.

COMPARISON OF AIR QUALITY DATA WITH  
THE NORTH DAKOTA AMBIENT AIR QUALITY STANDARDS \*

POLLUTANT : Nitrogen Dioxide (ppb)

LOCATION	YEAR	SAMPLING PERIOD	NUM OBS	M A X I M A 1 - HOUR		ARITH MEAN	% >MDV
				1ST MM/DD/HH	2ND MM/DD/HH		
Beulah - North	1999	APR-JUN	1005 ***	17 05/05/17	17 05/05/20	2.5	48.4
DGC #12	1999	APR-JUN	2110	32 06/05/00	27 06/04/23	4.3	98.2
DGC #17	1999	APR-JUN	2048	39 04/08/05	37 04/20/11	4.7	99.8
Dunn Center	1999	APR-JUN	2160	15 05/08/05	10 06/02/09	1.7	43.1
Fargo NW	1999	APR-JUN	2168	47 04/23/20	45 04/23/19	6.2	82.0
Hannover	1999	APR-JUN	2160	31 04/09/19	29 05/12/21	2.4	64.0
Sharon	1999	APR-JUN	2163	7 04/05/06	6 04/27/21	1.3	22.6
Short Creek - SPM	1999	APR-JUN	2164	22 04/14/03	18 06/04/19	2.7	75.1

The maximum 1-hour concentration is 47 ppb at Fargo NW on 04/23/20

\* The air quality standards are:  
STATE - 53 ppb maximum annual arithmetic mean.

FEDERAL - 53 ppb annual arithmetic mean.

\*\*\* Less than 80% of the possible samples (data) were collected.



COMPARISON OF AIR QUALITY DATA WITH  
THE NORTH DAKOTA AMBIENT AIR QUALITY STANDARDS \*

POLLUTANT : Inhalable FRM PM<sub>2.5</sub> Particulates (µg/m<sup>3</sup>)

LOCATION	YEAR	SAMPLING PERIOD	NUM OBS	MIN	M A X I M A 24 - HOUR			ARITH MEAN	#> 65	AM>15	%>MDV
					1ST MM/DD	2ND MM/DD	3RD MM/DD				
Beulah - North	1999	APR-JUN	13	2.0	8.5 04/12	8.0 04/06	7.9 04/30	5.3			100.0
Bismarck Residential	1999	APR-JUN	24	1.8	13.5 06/20	9.5 04/06	9.0 05/03	5.5			95.8
Fargo NW	1999	APR-JUN	29	1.9	18.5 06/20	15.3 04/27	14.5 05/03	7.8			96.5
Grand Forks - North	1999	APR-JUN	26	1.7	19.5 06/20	16.1 05/03	13.6 04/30	7.6			96.1
Sharon	1999	APR-JUN	15	1.9	10.8 05/30	8.9 04/30	8.1 05/24	6.0			93.3
Short Creek - SPM	1999	APR-JUN	11 ***	3.0	9.7 05/01	6.5 04/06	6.2 04/12	5.5			100.0

The maximum 24-hour concentration is 19.5 µg/m<sup>3</sup> at Grand Forks - North on 06/20

\* The ambient air quality standards are:

FEDERAL Standards -

- 1) 24-hour: 3-year average of 98th percentiles not to exceed 65 µg/m<sup>3</sup>.
- 2) Annual: 3-year average not to exceed 15µg/m<sup>3</sup>.

\*\*\* Less than 80% of the possible samples (data) were collected.

COMPARISON OF AIR QUALITY DATA WITH  
THE NORTH DAKOTA AMBIENT AIR QUALITY STANDARDS \*

POLLUTANT : Inhalable non-FRM PM<sub>2.5</sub> Particulates (µg/m<sup>3</sup>)

LOCATION	YEAR	SAMPLING PERIOD	NUM OBS	MIN	M A X I M A 24 - HOUR			ARITH MEAN	#> 50	AM>20	% >MDV
					1ST MM/DD	2ND MM/DD	3RD MM/DD				
Bismarck Residential	1999	APR-JUN	15	3.3	13.3 04/30	12.8 06/11	12.3 06/17	9.7			93.3
Dickinson Residential	1999	APR-JUN	12	4.3	15.6 04/30	9.8 06/05	8.2 05/24	7.2			100.0

The maximum 24-hour concentration is 15.6 µg/m<sup>3</sup> at Dickinson Residential on 04/30

\* The ambient air quality standards are:

FEDERAL Standards -

- 1) 24-hour: 3-year average of 98th percentiles not to exceed 65 µg/m<sup>3</sup>.
- 2) Annual: 3-year average not to exceed 15µg/m<sup>3</sup>.

COMPARISON OF AIR QUALITY DATA WITH  
THE NORTH DAKOTA AMBIENT AIR QUALITY STANDARDS \*

POLLUTANT : Inhalable PM<sub>10</sub> Particulates (µg/m<sup>3</sup>)

LOCATION	YEAR	SAMPLING PERIOD	NUM OBS	MIN	M A X I M A 24 - HOUR			ARITH MEAN	#>150	AM>50	% >MDV
					1ST MM/DD	2ND MM/DD	3RD MM/DD				
Dragswolf	1999	APR-JUN	15	0.0	12.8 04/18	9.5 05/18	8.9 05/24	5.2			60.0
Fargo NW	1999	APR-JUN	15	7.8	39.1 06/17	33.1 04/24	31.4 04/30	18.7			100.0
Short Creek - SPM	1999	APR-JUN	15	5.8	20.9 06/29	20.5 04/30	19.8 05/24	13.5			100.0
White Shield	1999	APR-JUN	15	0.0	10.1 04/18	10.1 05/24	7.7 04/30	5.3			73.3

The maximum 24-hour concentration is 39.1 µg/m<sup>3</sup> at Fargo NW on 06/17

\* The STATE and FEDERAL air quality standards are:

- 1) 150 µg/m<sup>3</sup> maximum averaged over a 24-hour period with no more than one expected exceedance per year.
- 2) 50 µg/m<sup>3</sup> expected annual arithmetic mean.

COMPARISON OF AIR QUALITY DATA WITH  
THE NORTH DAKOTA AMBIENT AIR QUALITY STANDARDS \*

POLLUTANT : Inhalable PM<sub>2.5</sub> Sulfates (µg/m<sup>3</sup>)

LOCATION	YEAR	SAMPLING PERIOD	NUM OBS	MIN	M A X I M A 24 - HOUR			ARITH MEAN	#>15.	AM>5.	% >MDV
					1ST MM/DD	2ND MM/DD	3RD MM/DD				
Bismarck Residential	1999	APR-JUN	15	0.3	2.8 06/11	2.0 04/30	1.8 05/18	1.2			93.3
Dickinson Residential	1999	APR-JUN	12	0.5	5.6 04/30	1.6 06/05	0.8 05/18	1.1			100.0

The maximum 24-hour concentration is 5.6 µg/m<sup>3</sup> at Dickinson Residential on 04/30

\* No standard is currently in effect.

COMPARISON OF AIR QUALITY DATA WITH  
THE NORTH DAKOTA AMBIENT AIR QUALITY STANDARDS \*

POLLUTANT : Inhalable PM<sub>10</sub> Sulfates (µg/m<sup>3</sup>)

LOCATION	YEAR	SAMPLING PERIOD	NUM OBS	MIN	M A X I M A 24 - HOUR			ARITH MEAN	#>15.	AM>5.	% >MDV
					1ST MM/DD	2ND MM/DD	3RD MM/DD				
Fargo NW	1999	APR-JUN	15	0.3	2.4 05/30	2.2 04/30	1.9 04/12	1.1			86.6
Short Creek - SPM	1999	APR-JUN	15	0.8	5.7 04/30	2.3 04/06	1.9 06/17	1.5			100.0

The maximum 24-hour concentration is 5.7 µg/m<sup>3</sup> at Short Creek - SPM on 04/30

\* No standard is currently in effect.

\*\*\* Less than 80% of the possible samples (data) were collected.

COMPARISON OF AIR QUALITY DATA WITH  
THE NORTH DAKOTA AMBIENT AIR QUALITY STANDARDS \*

POLLUTANT : PM<sub>2.5</sub> Sulfate/PM<sub>25</sub> Total Mass Ratio (Percentage)

LOCATION	YEAR	SAMPLING PERIOD	NUM OBS	MIN	M A X I M A 1ST MM/DD	2ND MM/DD	3RD MM/DD	ARITH MEAN
Bismarck Residential	1999	APR-JUN	14	6.8	21.9 06/11	15.8 05/18	15.6 04/12	12.4
Dickinson Residential	1999	APR-JUN	12	7.5	35.9 04/30	16.3 06/05	14.0 05/06	13.2

The maximum 24-hour ratio is 35.9 percent at Dickinson Residential on 04/30

\* No standard is currently in effect.

COMPARISON OF AIR QUALITY DATA WITH  
THE NORTH DAKOTA AMBIENT AIR QUALITY STANDARDS \*

POLLUTANT : PM<sub>10</sub> Sulfate/PM<sub>10</sub> Total Mass Ratio (Percentage)

LOCATION	YEAR	SAMPLING PERIOD	NUM OBS	MIN	M A X I M A 1ST MM/DD	2ND MM/DD	3RD MM/DD	ARITH MEAN
Fargo NW	1999	APR-JUN	13	2.3	12.0 05/06	11.1 04/06	10.9 04/18	7.4
Short Creek - SPM	1999	APR-JUN	15	5.1	27.8 04/30	20.5 04/12	20.0 04/06	11.8

The maximum 24-hour ratio is 27.8 percent at Short Creek - SPM on 04/30

\* No standard is currently in effect.



## SECTION THREE

### EXCEEDANCE LISTINGS

### By Site Date Hour

All Units Are in Parts Per Billion Except Wind Direction (Degrees),  
Wind Speed (MPH), CO (PPM), and PM<sub>2.5</sub> and PM<sub>10</sub> (µg/m<sup>3</sup>)

The \* Identifies the Exceedances

----- SITE=Amerada Hess - Tioga #3 -----															
DATE	HOUR	SO2	SO2 BLOCK	1-HOUR SO2 BLOCK	3-HOUR SO2 MAX	24-HOUR H2S	5-MIN H2S	24-HOUR BLOCK	NO2	O3	24-HOUR WS	24-HOUR WD	FRM25	PM10	PM25
May 5, 1999	2100	401*									29.1	357			
May 5, 1999	2200	375*									32.6	357			
May 6, 1999	100	349*									34.9	356			

### By Date Hour Site

All Units Are in Parts Per Billion Except Wind Direction (Degrees),  
Wind Speed (MPH), CO (PPM), and PM<sub>2.5</sub> and PM<sub>10</sub> (µg/m<sup>3</sup>)

The \* Identifies the Exceedances

----- DATE=May 5, 1999 -----															
SITE	HOUR	SO2	SO2 BLOCK	1-HOUR SO2 BLOCK	3-HOUR SO2 MAX	24-HOUR H2S	5-MIN H2S	24-HOUR BLOCK	NO2	O3	24-HOUR WS	24-HOUR WD	FRM25	PM10	PM25
Amerada Hess - Tioga #3	2100	401*									29.1	357			
Amerada Hess - Tioga #3	2200	375*									32.6	357			

----- DATE=May 6, 1999 -----															
SITE	HOUR	1-HOUR SO2	3-HOUR SO2 BLOCK	24-HOUR SO2 BLOCK	5-MIN SO2 MAX	24-HOUR H2S	5-MIN H2S	24-HOUR BLOCK	NO2	O3	WS	WD	FRM25	PM10	PM25
Amerada Hess - Tioga #3	100	349*									34.9	356			

